

ARISE - C-130 Hercules 09/13/14 Science Report

Aircraft:

[C-130H Hercules #439](#) ([See full schedule](#))

Date:

Saturday, September 13, 2014

Mission:

ARISE

Mission Location:

Arctic Ocean

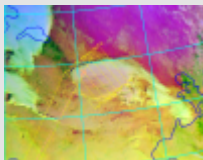
Mission Summary:

CERES Gridbox - Flt #8

The objectives for today's flight were to characterize the surface radiation budget and sea-ice conditions with a low altitude lawnmower pattern in a 100x100 km region (centered near 73N 133W), to characterize cloud radiative and microphysical properties, to obtain a profile of atmospheric state and to conduct a brief survey of the radiation budget from high altitude before returning to Fairbanks. A low-level cloud appeared to blanket the gridbox while the C-130 was in transit but this cloud was slowly drifting south and had cleared the northern quadrant of the region by the time the C-130 entered the planned pattern. Sea ice coverage was estimated to be greater than 90% in the region. A thin ice layer was found to have formed between the larger chunks of broken sea-ice. The clouds sampled near the southern end of the grid box were multi-layer lows clouds. The upper layer cloud top was found to be near 1700 m with cloud base at about 900 m. The lower layer appeared to be fog with tops at or below about 170 m (thus the base was never penetrated and likely extended to the surface). The C-130 was able to sample the higher cloud layer as well as the tops of the fog layer and obtain radiative properties above and below the upper layer. No cirrus clouds were present above, except over the north west corner of the grid box at the very end of the mission. The spectral and broadband albedo of the sea-ice in the clear portions of the gridbox were measured. These data will also be useful to corroborate data analyses from the previous high altitude gridbox survey conducted over the same region two days earlier. The C-130 data were acquired during 2 TERRA, 2 AQUA, 1 CALIPSO/CloudSat and 1 SNPP overpasses. All of the instruments were reported to work well.

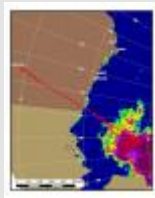
Images:

September 13, 2014 Figure 1



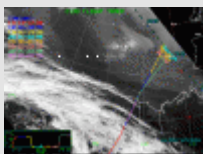
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September 13, 2014 Figure 2



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Submitted by:

William L. Smith Jr. on 09/14/14

Related Flight Report:

C-130 Hercules 09/13/14 - 09/14/14

Flight Number:

CERES Gridbox - Flight #8

Payload Configuration:

ARISE

Nav Data Collected:

Yes

Total Flight Time:

8.3 hours

Submitted by:

Martin Nowicki on 09/13/14

Flight Segments:

From:	PAEI	To:	PAEI
Start:	09/13/14 17:05 Z	Finish:	09/14/14 01:25 Z
Flight Time:	8.3 hours		
Log Number:	141002	PI:	Christy Hansen
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		

Flight Hour Summary:

	141002	151004
Flight Hours Approved in SOFRS	229	
Flight Hours Previously Approved		88.7
Total Used	140.3	18.2
Total Remaining		70.5

151004 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
10/02/14 - 10/03/14	Cal Flight	Science	8.6	8.6	80.1
10/04/14	Transit	Transit	9.6	18.2	70.5

Source URL: https://airbornescience.nasa.gov/science_reports/ARISE_-_C-130_Hercules_09_13_14_Science_Report

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Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

141002 Flight Reports					
Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining
08/24/14	Engineering Check Flight	Check	2.8	2.8	226.2
08/29/14	Boom Calibration Flight	Check	0.5	3.3	225.7
08/30/14	Project Check Flight	Check	5.2	8.5	220.5
09/01/14	Transit (1 of 2)	Transit	8.7	17.2	211.8
09/02/14	Transit (2 of 2)	Transit	6.6	23.8	205.2
09/04/14 - 09/05/14	Arctic Ocean - Flight #1	Science	6.6	30.4	198.6
09/05/14 - 09/06/14	140W Sea Ice - Flight #2	Science	7.1	37.5	191.5
09/06/14 - 09/07/14	Ice ZigZag-Terra - Flight #3	Science	7.1	44.6	184.4
09/07/14 - 09/08/14	CERES Gridbox - Flight #4	Science	8.4	53	176
09/09/14 - 09/10/14	CERES Gridbox - Flight #5	Science	7.7	60.7	168.3
09/10/14 - 09/11/14	MIZ Lawnmower - Flight #6	Science	8.8	69.5	159.5
09/11/14 - 09/12/14	CERES Gridbox - Flight #7	Science	7.5	77	152
09/13/14 - 09/14/14	CERES Gridbox - Flight #8	Science	8.3	85.3	143.7
09/15/14 - 09/16/14	CERES Gridbox - Flight #9	Science	8.1	93.4	135.6
09/16/14 - 09/17/14	Radiation Wall Pattern - Flight #10	Science	8.3	101.7	127.3
09/17/14 - 09/18/14	CERES Gridbox - Flight #11	Science	7.2	108.9	120.1
09/18/14 - 09/19/14	Sea Ice Albedo/CryoSat - Flight #12	Science	8.6	117.5	111.5
09/19/14 - 09/20/14	Radiation Wall Pattern - Flight #13	Science	8.3	125.8	103.2

09/21/14 - 09/22/14	Sea Ice & Radiation - Flight #14	Science	8.2	134	95
09/24/14 - 09/25/14	Gridbox TOA+Surface - Flight #15	Science	6.3	140.3	88.7